Volunteer Lake Assessment Program Individual Lake Reports

MOUNTAIN LAKE, UPPER, HAVERHILL, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,155	**Max. Depth (m):**	5.5	**Flushing Rate (yr^{-1})**	17.1
Surface Area (Ac.):	30	**Mean Depth (m):**	2.5	**P Retention Coef:**	
Shore Length (m):		**Volume (m^3):**	232,500	**Elevation (ft):**	776

TROPHIC CLASSIFICATION

Year	Trophic class
1984	MESOTROPHIC
2006	EUTROPHIC

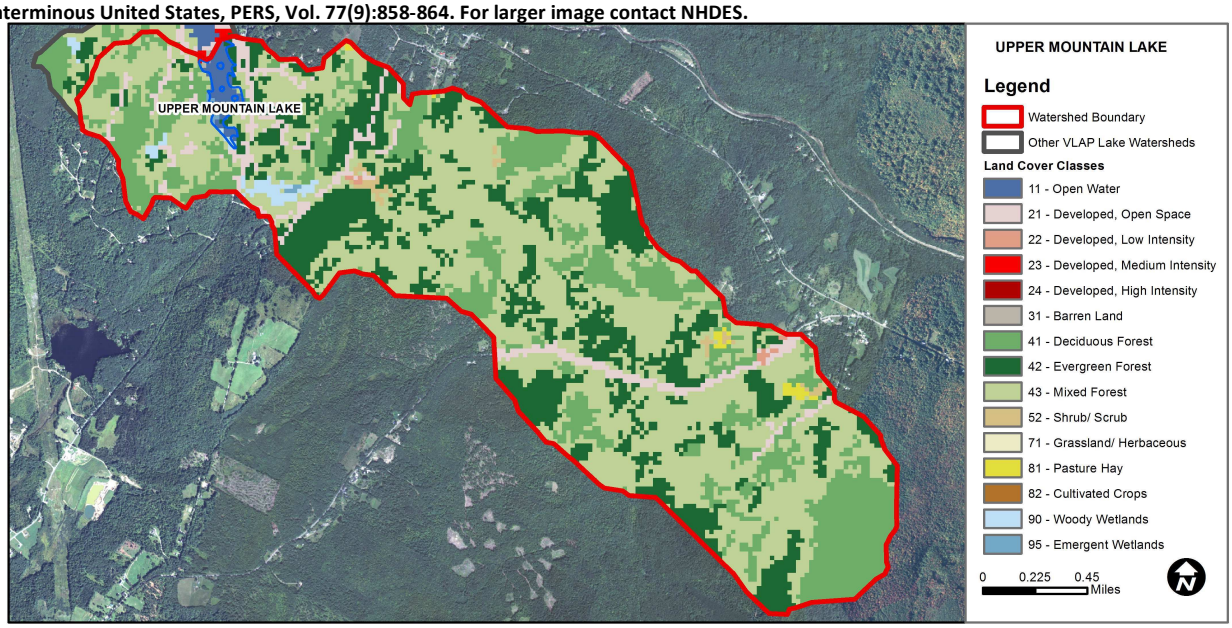
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Cautionary	<5 samples and median is > threshold. More data needed.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.
	Chlorophyll-a	Good	At least 10 samples with 1 sample but < 10% of samples exceeding criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	1	Barren Land	0.03	Grassland/Herbaceous	0
Developed-Open Space	4.72	Deciduous Forest	21.45	Pasture Hay	0.35
Developed-Low Intensity	0.17	Evergreen Forest	22.87	Cultivated Crops	0
Developed-Medium Intensity	0.02	Mixed Forest	46.8	Woody Wetlands	0.75
Developed-High Intensity	0	Shrub-Scrub	0.56	Emergent Wetlands	0.13

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
MOUNTAIN LAKE, SOUTH, HAVERHILL, NH
2012 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphic)*

- **CHLOROPHYLL-A:** Chlorophyll levels were elevated and were the highest measured since monitoring began. Historical trend analysis indicates chlorophyll levels tend to fluctuate greatly.
- **CONDUCTIVITY/CHLORIDE:** Conductivity levels were slightly elevated and greater than the NH lake median.
- **E. COLI:** E. coli levels slightly elevated at the Beach but were less than the state standard for public beaches.
- **TOTAL PHOSPHORUS:** Epilimnetic (upper water layer) and Hypolimnetic (lower water layer) phosphorus levels were elevated, which likely contributed to the elevated chlorophyll level. Epilimnetic phosphorus levels were the highest measured since monitoring began and historical trend analysis indicates a significantly increasing (worsening) phosphorus level. Monteau Inlet phosphorus levels were relatively low.
- **TRANSPARENCY:** Transparency was much lower due to the increased algal growth and was the lowest transparency measured since monitoring began. Historical trend analysis indicates transparency tends to fluctuate greatly.
- **TURBIDITY:** Epilimnetic and hypolimnetic turbidity were elevated due to the elevated algal growth.
- **PH:** pH levels tend to decrease to less than desirable in the hypolimnion.
- **RECOMMENDED ACTIONS:** Stormwater runoff is causing beach erosion and likely contributing the worsening phosphorus trend. Inspect gravel and dirt roads for signs of erosion and implement best management practices outlined in the U.S. Forest Service's "Environmentally Sensitive Road Maintenance Practices for Gravel and Dirt Roads". Educate watershed residents on ways to reduce stormawter runoff from their properties utilizing DES' "NH Homeowner's Guide to Stormwater Management".

Dissolved Oxygen & Temperature Profile

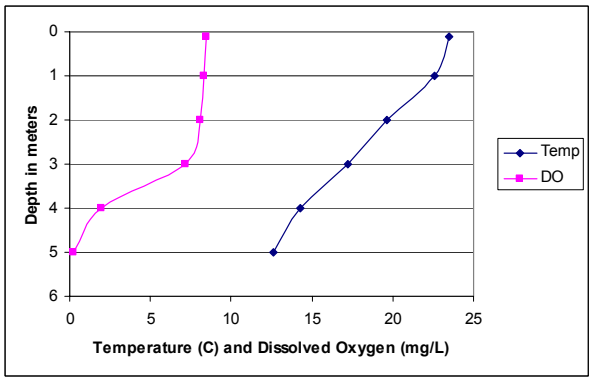
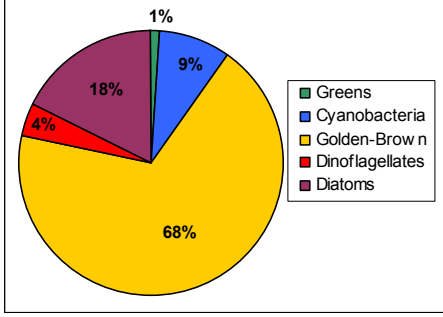


Table 1. 2012 Average Water Quality Data for SOUTH MOUNTAIN LAKE

Station Name	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m NVS	Turb. ntu	pH
Beach				68				
Deep Epilimnion	10.1	9.45	90.2		19	1.40	4.54	6.71
Deep Hypolimnion			90.8		21		4.18	6.38
Monteau Inlet			89.0		11		1.82	6.95

South Mountain Lake Phytoplankton Population

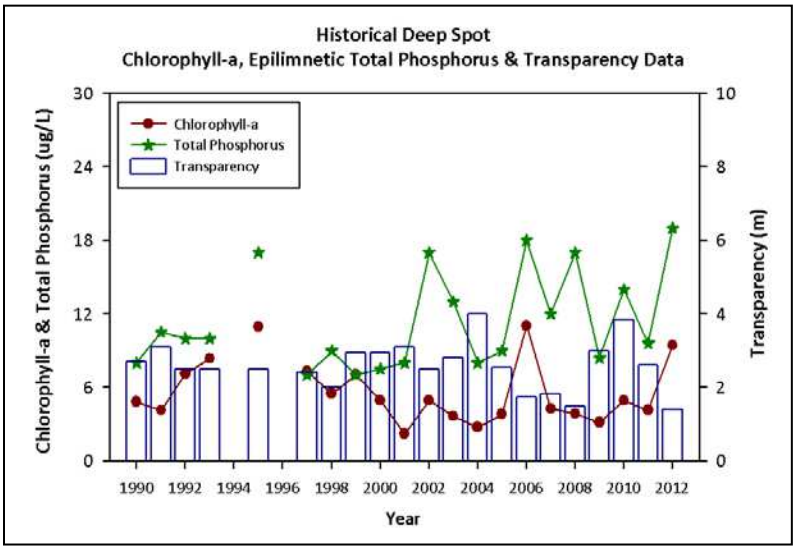


NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Variable	Data fluctuate annually, but are not significantly increasing or decreasing.
Transparency	Variable	Data fluctuate annually, but are not significantly increasing or decreasing.
Phosphorus (epilimnion)	Degrading	Data significantly increasing (worsening).



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